



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,055	09/09/2003	Kathleen Aertgeerts	DPP-IV-5001-C1	3118
32793	7590	09/01/2006	EXAMINER	
TAKEDA SAN DIEGO, INC. 10410 SCIENCE CENTER DRIVE SAN DIEGO, CA 92121			NASHED, NASHAAT T	
			ART UNIT	PAPER NUMBER
			1656	

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/659,055	AERTGEERTS ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Nashaat T. Nashed, Ph. D.	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,10-13 and 15-21 is/are pending in the application.
- 4a) Of the above claim(s) 17-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4-8, 10-13, 15, and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1656

The application has been amended as requested in the communication filed June 19, 2006. Accordingly, claims 2, 3, 9, 14, 22, and 23 have been canceled, and claims 1, 4, 7, 8, 10, and 16 have been amended.

Claims 1, 4-8, 10-13, 15, and 16 are under consideration.

The drawings are objected to because the headings for the sequences are wrong and the atomic coordinate data in Figure 3 is confusing. Figure 3 lists the atomic coordinate of what is believed to be a homotetramer, but, at least, subunits A and B have different amino acid residues. Subunit A starts with Arg-52 and end with Pro-778 (it should be 776), whereas subunit B start with His 47-His-50 (part of the His-tag), which is followed by Ser-51 to Pro-778 (the numbers of the amino acid residues should be corrected to corresponds to either the amino acid sequence of SEQ ID NO: 1 or 3. Finally, the abbreviation "NAG" is neither defined in the specification, figure description, or the legend of the Figure. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Applicants were not responsive to the above objection to the drawing of Figure 3.

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825. 37 CFR 1.821 (d) requires the insertion of a sequence identification number following the mentioning of a protein, which its sequence is disclosed in the sequence listing. For example SEQ ID NO: 1 should be inserted in paragraph 43, line 2 and on line 1 of paragraph 45 at page 10. Figure 3 constitute a disclosure of an amino acid sequence, which the sequence identifier should be in the heading of the Table of Figure 3 description. Also, Tables 1-3 should have a sequence identifier following DPPIV. Applicants are responsible for identifying all instances that require a sequence identifier and insert them through out the specification.

Art Unit: 1656

Applicants were not responsive to the above objection to the drawing of Figure 3.

Claim 11 is objected to because of the following informalities: "P21" should be P2<sub>1</sub>. Appropriate correction is required.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 4-8, 10-13, 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement for the reasons set forth in the prior Office action for rejecting claims 1-13, mailed 2/24/06.

Applicants noted that the amendment obviate the above rejection.

Applicants arguments filed 6/19/06 have been fully considered, but they are found unpersuasive. Claims 1, 4, 15, and 16 read on any crystal in any space group containing the polypeptide of SEQ ID NO: 3. Claim 5 is dependent on claim 1 and limits the claim to any crystal in space group P2<sub>1</sub> having any cell dimension. Claim 6 limits claim 1 to any crystal in any space group having the unit cell dimensions and angles to those listed in the claim. Claims 7, 8 and 10-13 are directing to any method of obtaining any crystal of the protein of SEQ ID NO: 3. Thus, the claims read on a genus of crystals and methods represented by a single species.

The court of Appeals for the Federal Circuit has held that a "written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula [or] name chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." *UC California v. Eli Lilly* (43 USPQ2d 1398). For claims drawn to genus, MPEP section 2163 states the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or physical and/or chemical properties, by functional characteristics coupled with known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. Also, MPEP section 2163 states that a representative number of species mean that the species, which are adequately described, are representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus. At the time of invention, no crystal was reported in the art for the polypeptide of SEQ ID NO: 3. The specification fails to describe additional representative species of

Art Unit: 1656

these crystals by any identifying structural characteristics or properties other than the space group and unit cell dimensions in claims 5 and 6, respectively, for which no predictability of structure is apparent. Given this lack of additional representative species as encompassed by the claims, Applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise, and exact terms that a skilled artisan would recognize Applicants were in possession of the claimed invention.

While claims 15 and 16 were indicated to be allowable in the previous Office action because the polypeptide of SEQ ID NO: 3 is novel, the claims are now included in this rejection after further consideration of their scope in light of the specification. The claims read on any composition of the polypeptide of SEQ ID NO: 3, which includes any crystal for the polypeptide of SEQ ID NO: 3.

Claims 1, 4-8, 10-13, 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement for the reasons set forth in the prior Office action for rejecting claims 1-13, mailed 2/24/06.

In response to the above rejection, applicants amended the claims to be limited to any crystal containing the protein consisting of SEQ ID NO: 3, and argue that the amendment to the claims obviates the rejection.

Applicants arguments filed 6/19/06 have been fully considered, but they are found unpersuasive. It is well established in the art that obtaining a protein and its complexes in a crystal form is highly unpredictable without any clear expectation of success, and any change in a given crystallization condition including any minor alteration could alter the crystal form and its diffraction characteristics or even lack of crystal formation. It is now evident that protein crystallization is the major hurdle in protein structure determination. For this reason, protein crystallization has become a research subject in and of itself, and is not simply an extension of structure biologist or crystallographer's laboratory. There are many references that describe the difficulties associated with protein crystals. See for example, Gilliland *et al.*, (*Curr. Opin. in Struct. Biol.* 1996, 6, 595-603) in particular page 600, left column second paragraph; Ke *et al.* (*Methods*, 2004, 34, 408-414); and Wiencek, J. M. (*Ann. Rev. Biomed. Eng.* 1999, 1, 505-534). Applicants have provided no arguments or presented any evidence indicating the teaching of one monoclinic crystal in space group  $P2_1$  with the specific unit cell dimension in claim 6 for the protein of SEQ ID NO: 3 grown under specific crystallization condition is sufficient enablement for any crystal of SEQ ID NO: 3 obtained under any crystallization conditions. As indicated above, claims 15 and 16 read on any composition of the polypeptide of SEQ ID NO: 3, which includes any crystal for the polypeptide of SEQ ID NO: 3.

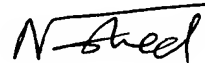
No claim is allowed.

Art Unit: 1656

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nashaat T. Nashed, Ph. D. whose telephone number is 571-272-0934. The examiner can normally be reached on MTWTF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen M. Kerr can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Nashaat T. Nashed, Ph. D.  
Primary Examiner  
Art Unit 1656